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PATENT TRADEMARK OFFICE



Docket No: 9626/1L207-US1

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: Tetsuya ATSUMI et al.

Serial No.: 09/473,495 Art Unit: 1733

Confirmation No.: 1052

Filed: December 28, 1999 Examiner: J. R. Fischer

For: SHAFT FOR LIGHT-WEIGHT GOLF CLUBS

PENDING CLAIM AS OF APRIL 24, 2003

20. A method for forming a golf club shaft around a mandrel having a length along a longitudinal axis, the steps comprising:

forming a first reinforcement layer from a first fiber material, said first fiber material having fibers aligned along a single direction;

forming a first angled layer by bonding second and third fiber materials, such that the fibers of said second material form a first angle with the fibers of said third material, said second and third materials having fibers aligned along a single direction;

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forming a first straight layer from a fourth fiber material, said fourth fiber material having fibers aligned along a single direction;

forming a second angled layer from fifth and sixth fiber material, said fifth and sixth materials having fibers aligned along a single direction;

bonding said fifth and sixth fiber materials together to form said second angled layer, such that said fibers of said fifth and sixth material form a second angle in the range of from 70-150 degrees and said second angled layer has a thickness in the range of from 0.04 to 0.1 mm;

forming a second straight layer from a seventh fiber material, said seventh fiber material having fibers aligned along a single direction;

forming a second reinforcement layer from an eighth fiber material, said fiber material having fibers aligned along a single direction;

wrapping said first reinforcement layer around said mandrel such that said fibers of said first reinforcement layer are aligned 90 degrees with respect to said longitudinal axis;

wrapping said first angled layer around said first reinforcement layer such that said first angle of said fiber material of said first angled layer is bisected by said longitudinal axis;

wrapping said first straight layer around said first angled layer such that said fibers of said first straight layer are aligned with said longitudinal axis;

wrapping said second angled layer around said first straight layer such that said second angle of said fiber material of said second angled layer is bisected by said longitudinal axis;

wrapping said second straight layer around said second angled layer such that
said fibers of said second straight layer are aligned with said longitudinal axis;
wrapping second reinforcement layer around said second straight layer to form a
layered wrap, such that said fibers of said second reinforcement layer are aligned with said
longitudinal axis;
curing said layered wrap in an oven to form a cured shaft;
removing said mandrel from said cured shaft; and
trimming ends said cured shaft to produce said golf club shaft.